

BOOK REVIEW

The Smaller Majority: The Hidden World of the Animals that Dominate the Tropics, by Piotr Naskrecki. Harvard University Press, Cambridge, Massachusetts & London, UK. 2005; x + 278 pp; hardback. ISBN 0-674-01915-6. Price US\$35.

Invertebrates and other small animals play crucial roles in ecosystem health, including soil production, water filtration, pollination and provision of food for the other, larger vertebrates. In short, invertebrates make the Earth a liveable planet, yet insects and other invertebrates are disappearing from the globe at a rate faster than their larger vertebrate cousins, particularly in tropical regions. We do not know the precise rate of loss (nor for sure which species have gone), due to uncertainties in taxonomic composition and number and the general lack of baseline data on their distributions, but we can be fairly certain that the current extinction rate – the sixth (human-induced) mass extinction event – is faster than anything the planet has experienced in the past. The reason is simple: most tropical invertebrates have narrow, specialised niches, but the vast tropical forests of central West Africa, SE Asia and South America in which they live are disappearing at a phenomenal rate. Each species lost is another chapter of the genetic diversity and evolutionary history destroyed forever.

Moreover, most animals are small and live in tropical latitudes, yet most people do not notice small animals and live in temperate latitudes, compounding the problem. So what is the solution? A key first step is the need for better education and conservation advocacy, promoting the importance and popularity of invertebrates and the need to conserve the habitats in which they live. *The Smaller Majority* fills this critical need. The author, Piotr Naskrecki, is Director of the Invertebrate Discovery Initiative of Conservation International, and has provided a compelling tool to promote invertebrates and their urgent need for conservation. His message is simple. If the general public can understand and appreciate the beauty and ecological importance of invertebrates, they are more likely to care for them; and caring is the key to their long-term preservation.

The purpose of the book is therefore to celebrate everything that is small and misunderstood in the natural biological world – to understand and notice them, and to highlight the enormous diversity of life found right under our very feet. This ambitious goal is admirably achieved with the presentation of a comprehensive collection of more than 400 stunning photographs from the tropical areas of the world, particularly Central America and Africa but also Australia and, to a lesser extent, the Solomon Islands and Madagascar, augmented with an informative text. It thus covers insects and other terrestrial invertebrates, together with small amphibians and reptiles, which Naskrecki collectively refers to as the ‘smaller majority’. Given that nearly all animals on Earth are small and largely ‘unseen’, there is clearly a limit to how much attention can be allocated to each group. As Naskrecki notes [on page 3] ‘It does not pretend to be an exhaustive overview of tropical biota, and its taxonomic coverage is fragmentary. Each page provides only a glimpse into an animal’s world rather than a comprehensive account of its life cycle’.

The book focuses on three major terrestrial ecosystems: humid forests, savannas and deserts. These three biomes are not treated equally, with 174 pages (72%) devoted to humid forests compared with 46 pages (19%) to savannas and 22 pages (9%) to

deserts: the bias in coverage reflects differences in species richness between each biome rather than their spatial representation on the globe. A prologue sets out how the author discovered the smaller majority, and why it is important to understand and conserve invertebrates. The three major biomes follow, which make up the bulk of the book, with attention given to threatening processes. Then follows an epilogue in which Naskrecki highlights the taxonomic impediment of invertebrates against the current biodiversity crises and the urgent need to document the Earth's biological heritage more effectively. The epilogue includes a series of images depicting several undescribed taxa but, more importantly, we are reminded of the thrill and adventure of discovering species new to Science. A short chapter on photographing the smaller majority provides useful practical tips on working in the rainforest and the basic equipment needed. A list of international organisations (almost all in USA) devoted to conservation, acknowledgements and a species index (including both common and scientific names) complete the work.

The photographs are masterpieces in their own right and many fill an entire page! Particularly stunning are the pictures of *Cholus cinctus* (a weevil from Costa Rica: p. 15), in flight, *Gasteracantha metallica* (a jewel spider from the Solomon Islands: p. 108), *Pseudatteria leopardina* (a diurnal leafroller moth from Costa Rica: p. 147), *Uroplatus phantasticus* (a Malagasy leaf-tailed gecko: p. 159), *Tympanophora uvarovi* (an Australian balloon-winged katydid: p. 193) and *Polyspilota aeroginosa* (an African savanna mantid: p. 222) against the sunset, to name just a few. There is also an evocative image of two workers of *Oecophylla smaragdina* (green tree-ant or weaver ant from Australia: p. 132) attending the larva of a lycaenid butterfly (scientific name not given but clearly *Hypolycaena phorbis*). Most, but not all terrestrial invertebrates mentioned are illustrated. There is a strong bias towards katydids and allied insects, although this is probably understandable given that the author is a world authority of the group.

The Smaller Majority is more than a compilation of first class natural history photographs. The superb images are interwoven with text that is lucid, detailed, scientifically accurate and easy to read. Naskrecki is one of those rare authors who can communicate effectively to both the scientific audience and the wider general public. He also writes with flair and passion. Thus, the illustrative material is augmented with a considerable amount of information on natural history, ecology and evolutionary principles, as well as personal anecdotes. For example, we learn that the evolutionary success of weevils, the largest family of all living organisms, is probably due to their mouthparts being able to exploit seeds and nuts of flowering plants and the co-diversification of these plants in the Late Cretaceous. We also learn about the unique and spectacular radiation of the Australian spur-throated grasshoppers (Cantatopinae), and that the pointillist art style of Aboriginal paintings may have had its origins based on the colour patterns displayed by Australian spotted pyrgomorph grasshoppers. On pages 86-87, Naskrecki recalls his discovery of cockroaches and moths feeding at night on the honeydew of plant-feeding fulgorids (Auchenorrhyncha) – a most unusual association in which the benefit to both parties is not entirely clear. I was delighted to see a section devoted to the 'heelwalkers' – Mantophasmatodea – the newly recognised insect order from Africa that previously were thought to have died out in the Miocene.

I found few weaknesses with this book. A glossary would have been a useful addition, as some of the terms used (e.g. co-existence, cryptic, diurnal, mutualism, mimicry,

parasite) require some basic knowledge or understanding of tertiary-level biology, although the author has attempted to qualify many of these terms in the text; for example: 'A butterfly pupa, also known as the chrysalis, looks like a beautiful sculpture' [p. 144]. The index is unworkable; for instance, all ant species are listed under 'ants' but not under Hymenoptera or Formicidae, but all moths and butterflies are listed under 'Lepidoptera'. As a result, it is difficult to trace entries; for example, there is no separate entry for *Oecophylla smaragdina* under 'O' or 'S', nor under 'H' for Hymenoptera, 'F' for Formicidae or 'W' for weaver ant, and there is no separate entry for *Eurema hecabe* under 'E' or 'H', or under 'S' for sulphur butterfly. As it stands, the index assumes the reader knows the correct systematic placement of these and all other taxa. This is an unreasonable assumption given the audience for which this book is intended.

Despite these very minor shortcomings, *The Smaller Majority* is a landmark publication bringing together superb natural history, macro-photography, biological science and conservation concerns: it serves to promote both the importance of insects and the conservation of tropical habitats in which they live. The wide scope and general knowledge that Naskrecki has brought together in a single work are truly breathtaking. If you love insects or close-up photography, or desire to learn more about those 'far off' tropical places, then this book is for you. It will especially appeal to youngsters or anyone with a fascination of our natural world. I am confident that Naskrecki's dream 'that the images in this book will reinforce a child's interest in the natural life of caterpillars or frogs, or perhaps they will awaken a long-forgotten fascination with small creatures in an older reader' will be fulfilled. I am also confident that it will inspire the next generation of invertebrate conservation biologists. In summary, this work is a must buy!

M.F. Braby

Invertebrate Conservation Biologist at the Biodiversity Conservation Division, Department of Natural Resources, Environment and the Arts, PO Box 496, Palmerston, NT 0831 and Visiting Fellow at the School of Botany and Zoology, The Australian National University, Canberra, ACT 0200.